PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
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The Blood-pressure-raising Substance of the Kidney.—A. Bingel and E. Strauss (*Deut. Archiv f. klin. Med.*, 1909, xcvi, 476) report their careful observations on the blood-pressure-raising substance in the kidney in an interesting article. Tigerstedt and Bergman had previously shown the presence of a substance in watery extracts of rabbits' kidneys called rennin, which, when injected into rabbits, had a distinct blood-pressure-raising effect. Bingel and Strauss in their experiments used the pressed juice of fresh kidneys. Only the cortex corticis was employed, the pyramids being cut away and all blood washed out. The present investigation was carried out chiefly with extracts of pigs' kidneys, for Bingel and Strauss had previously shown that the extracts from kidneys of all large animals possessed the same effect, when injected into rabbits, as the extract from the kidneys of rabbits themselves. Tests were made with the juices of many other organs, but all save the hypophysis cerebri and adrenal gave depressor effects. The pancreas was especially noticeable in this respect. The action of the kidney juice was very powerful, for it produced a rise in pressure of from 40 to 60 mm. Hg. This lasted from one-quarter to one-half hour, and the descent was slow. Bingel and Strauss, moreover, were able to separate the active principle, which they call rennin, from the kidney extracts. Among other qualities they state that the activity of the substance is destroyed by heating to 58° C. and by the action of acids, alkalies, alcohol, and acetone. Physiologically it has precisely the same action as the whole kidney juice. After injection the effect is not immediate, but appears in about one-fourth of a minute. The rise in pressure is not extremely rapid, for it takes from one to two minutes to reach the highest point. The height is maintained for variable lengths of time and then there follows a gradual sinking in pressure. This decline usually requires from one-half to three-fourths of an hour. The maximum rise recorded in any of their experiments was 70 mm. Hg. A comparison of the action of rennin with that of adrenalin indicates that the former causes a much less sharp rise of pressure and permits a slower fall. Repeated injections of rennin produce progressively less effect, until finally there is no response. But this is not because the animal's blood-pressure-raising capacity is lost, for injection of adrenalin after a series of rennin injections causes prompt rise of pressure. If the animals are allowed to rest after such a series of rennin injections for two hours, the substance again provokes a rise of pressure. A curious phenomenon was noted when an animal was first injected with the juice of other organs and then given rennin. No rise in pressure occurred. Cutting off the nerve control of the vascular system did not check the action of rennin. In conclusion the authors say that the action of rennin, like that of adrenalin, is exerted on the muscles of the peripheral vessels. They further suggest the possible significance of rennin in connection with the high arterial tension of kidney disease, especially with the sclerotic type of kidney.

A few months before the publication of the above paper the work of PEARCE (*Jour. Exper. Med.*, 1909, xi, 430) upon a similar problem appeared. He found, rather in contradiction to Bingel and Strauss, that injections of extracts of rabbits' kidneys caused in rabbits a very slight rise in blood pressure; extracts of dogs' kidneys caused in dogs a marked fall in pressure; while extracts of cats' kidneys produced in cats a decided rise. Thus, each animal reacted differently to injections of extracts of kidneys of the same species. It was found, besides, that each animal always reacted in the same way toward kidney extracts of other species. Thus, dog's kidney extracts caused a slight rise of pressure in rabbits, while rabbit's kidney extracts produced a marked fall of pressure when injected into dogs. The extracts of kidneys which are the seat of experimental nephritis do not differ from those of normal kidneys. The serum, however, from dogs and rabbits which are the subjects of experimental uranium and chromate nephritis contains substances which cause some disturbance in blood pressure, evidenced either by a rise or fall when injected into other animals.

The Influence of Coronary Disease on the Heart Muscle, with Especial Reference to Chronic Aortitis.—There has always been discussion as to whether the coronaries were true end-arteries or whether they anastomosed. Even after Lanzer's work in 1880 arguments were still advanced to uphold Cohnheim's view that the coronaries are end-arteries. Very closely dependent upon this anatomical point is the relation of coronary disease to the condition of the heart muscle, and VON REDWITZ (*Virchow's Archiv*, 1909, cxcvii, Heft 3) reports a series of 18 carefully studied cases to show that heart muscle changes are rarely dependent upon disease of the coronary arteries. As an introduction, von Redwitz describes at length the vessels under discussion from an anatomical standpoint, and presents very satisfactory proof by means of ligature and injection experiments that there is a free anastomosis between the right and left coronary system and the vasa vasorum of the aortic bulb. Following this the work of Kolster is quoted to show that sudden blocking of a small branch caused, first, coagulation necrosis of heart muscle cells, and later a typical scar formation in the area supplied by the plugged branch. The resultant condition is infarction, but has been erroneously called myocarditis and grouped with that condition. The 18 cases could be divided, anatomically speaking, into two groups. In one the arterial disease was almost entirely or entirely confined to the bulb of the aorta, and affected the coronaries only by narrowing or closing their ostea. In the other group of cases the coronary arteries themselves were the seat of sclerotic changes of various degree and extent. Sections taken from different parts of the heart muscle almost always revealed numerous scar-like masses composed of fibrous tissue, small, round cells, and often larger epithelial cells. Frequently fatty degeneration involving more or less of the organ was met with. But in only three cases could von Redwitz note any definite relation between the diseased coronaries and the distribution of the scars. For example, in one case in which both coronaries were equally diseased there were muscle changes in the region of the left apex only; in another, one coronary was completely blocked and the scars in the musculature were found distributed through the whole heart; in still others with advanced coronary disease there were no muscle changes. But it is interesting to note that in this last group a widely dilated epicardial capillary network continuous over the base of the aorta bespoke the activity of the auxiliary collateral circulation. The scars in the three cases, which were evidently due to closure of a small branch, von Redwitz believes to have been caused in the manner described by Kolster. To explain the pathogenesis of the myocardial changes in the absence of sufficient cause by coronary disease von Redwitz advances the following argument: A review of the other pathological conditions present in his 18 cases shows that 9 had marked valvular disease, 2 had aneurysm, 3 nephritis, and the remaining 4 advanced general arterial sclerosis. In other words, the myocardial changes were found in hearts which during life had been subjected to an undue amount of work, or had been injured by rheumatism.

Protozoa in the Blood in Typhus Fever.—KROMPECHER, GOLDZIEHER, and ARGYAN (*Zent. f. Bakt.*, 1909, 1, 619) had an opportunity during an epidemic of typhus fever in Budapest to study 48 cases during life. In the blood of all of these patients structures which simulated parasites were found. These bodies were present both inside the red blood corpuscles and free in the plasma. They were very scarce and could only be demonstrated by the Giemsa stain. Three types of structure are described, but in general these types were similar and consisted of a pale blue ground work containing red chromatin bodies. Although they were found in very small numbers, they could be seen constantly in daily examinations of the blood of patients during the illness. In the fatal cases at autopsy these same structures were seen in smears from the bone marrow and spleen, but in no other situation. They could not be demonstrated in sections. They resembled in form more closely piroplasma than malarial parasites. The authors believe that they can exclude the possibility of these bodies being artefacts from a precipitate or stain, blood platelets, nuclear products, or the metachromatic substances of red cells, and consider them parasites connected in some way with the disease.

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